

Listing of Claims:

1. (Currently Amended) A device for ~~the~~ three-dimensional reconstruction of ~~the~~ flow conditions in a vascular system (3) ~~with the aid of~~ using two-dimensional projections of the vascular system during a contrast-medium injection, comprising:

an imaging device (1) for producing two-dimensional projection pictures of the vascular system (3) taken from different directions (~~A, Bi, C~~);

an injection device (5) for the controlled injection of a contrast medium into the vascular system (3);

a control unit (6) that is coupled to the imaging device (1) and that is designed to drive the imaging device in accordance with the following steps:

a) production of projection pictures taken from the same projection direction (~~A~~) at a high picture-taking rate during the inflow of the contrast medium after a contrast-medium injection;

b) rotation of the imaging device around the vascular system (3) and production of projection pictures taken from different directions (~~Bi~~) while the vascular system (3) is filled with the contrast medium;

c) production of projection pictures from a fixed direction during drainage of the contrast medium from the vascular system.

2. (Currently Amended) A device as claimed in claim 1, ~~characterized in that~~wherein the imaging device is a rotation X-ray unit (~~1, 2, 4~~).

3. (Currently Amended) A device as claimed in claim 2 ~~[[1]]~~, ~~characterized in that~~wherein ~~[[,]]~~ during ~~[[the]]~~ rotation of the rotation X-ray unit (~~1, 2, 4~~), the projection pictures are produced at a lower picture-taking rate ~~and/or at a lower radiation dose.~~

4. (Currently Amended) A device as claimed in claim 1, ~~characterized in that~~wherein the control unit (6) is designed to drive the imaging device (1) after completion of the rotation to produce projection pictures taken from a fixed projection direction (~~C~~) at a ~~preferably~~ higher picture-taking rate.

5. (Currently Amended) A device as claimed in claim 1, ~~characterized in that~~wherein the control unit ~~(6)~~ is designed to initiate the beginning of the rotation as a function of an image analysis of the projection pictures produced during the inflow of the contrast medium.

6. (Currently Amended) A device as claimed in claim 1, ~~characterized in that~~wherein the control unit ~~(6)~~ is coupled to the injection device ~~(5)~~ in order to record and/or to control the injection process.

7. (Currently Amended) A method for the three-dimensional reconstruction of the flow conditions in a vascular system ~~with the aid of~~ using two-dimensional projections of the vascular system during a contrast-medium injection, comprising ~~the following steps~~:

a) production of projection pictures taken from the same projection direction ~~(A)~~ at a high picture-taking rate during the inflow of the contrast medium;

b) production of projection pictures of the vascular system ~~(3)~~ taken from different directions ~~(B_i)~~ while the vascular system ~~it~~ is filled with the contrast medium; and

c) production of projection pictures from a fixed direction during drainage of the contrast medium from the vascular system after step b).

8. (Currently Amended) A method as claimed in claim 7, ~~characterized in that~~wherein the projection pictures are produced by means of X-rays.

9. (Currently Amended) A method as claimed in claim 7 ~~[[8]]~~, ~~characterized in that~~wherein the picture-taking rate ~~and/or the radiation dose~~ is reduced during step b).

10. (Currently Amended) A method as claimed in claim 7, further comprising rotating an imaging device to capture the projection pictures of step b) and commencing the rotation of the imaging device based on an image analysis of the projection pictures in step a) ~~characterized in that, after step b), projection pictures are produced from a fixed direction (C) during the drainage of the contrast medium from the vascular system (3).~~

11. (New) The device of claim 2, wherein the projection pictures are produced at a lower radiation dose during rotation of the rotation X-ray unit.
12. (New) The device of claim 1, wherein the control unit initiates the rotation based on at least one of an amount of time since commencing the contrast medium injection and an amount of the contrast medium that has been injected.
13. (New) The device of claim 1, wherein the reconstruction is performed using a selection of the projection pictures during the same heartbeat phase.
14. (New) The method of claim 8, wherein the radiation dose is reduced during step b).
15. (New) The method of claim 7, further comprising rotating an imaging device to capture the projection pictures of step b) and commencing the rotation of the imaging device based on at least one of an amount of time since commencing the contrast medium injection and an amount of the contrast medium that has been injected.
16. (New) The method of claim 7, further comprising performing the reconstruction using a selection of the projection pictures during the same heartbeat phase.
17. (New) A method for three-dimensional reconstruction of flow conditions in a vascular system using two-dimensional projections of the vascular system during a contrast-medium injection, the method comprising capturing a first set of images of the vascular system taken from different directions while the vascular system is filled with the contrast medium; and capturing a second set of images from a fixed direction during drainage of the contrast medium from the vascular system.

18. (New) The method of claim 17, further comprising capturing a third set of images of the vascular system taken from the same direction during inflow of the contrast medium; and performing image analysis of the third set to determine commencement of capturing the second set of images.

19. (New) The method of claim 18, further comprising performing the reconstruction using a selection of images during the same heartbeat phase from at least one of the first, second and third set of images.

20. (New) The method of claim 18, further comprising reducing radiation exposure during the capturing of the first set of images.